This five-day meeting will consist of a combination of design clinics and teach-ins on topics critical for designing impact evaluations and field experiments intended to measure the effects of policies, interventions, and programs on policy outcomes. Teach-in topics will include randomization, statistical power, and threats to the estimation of treatment effects. Throughout the week participants will work to develop their own research designs together with peers and more senior researchers.

Venue: Radisson Hotel & Suites, Zona 10, Guatemala City, Guatemala.

Timing: The workshop starts on Monday 21 August at 9AM and closes Friday 25 August at 5PM

Organization
The Learning Days are overseen by Daniel Nielson (Brigham Young University, DN) and Natalia Garbiras-Díaz (University of California, Berkeley, NG). Support from Mercy Corps will be provided by Marcel Jansen (MJ).

Study material
- Please bring a laptop. Make sure you have R and Rstudio[1] installed. See notes below.
- We will use material developed by EGAP (http://egap.org/list-methods-guides)
- Additional material is drawn from
    - Dunning, Thad. 2012*. Natural experiments in the social sciences: a design-based approach*. New York: Cambridge University Press.
    - Gerber, Alan S, y Donald P Green. 2012. *Field experiments: Design, analysis, and interpretation*: New York: W.W. Norton. Chapters 1 to 5 [2]
    - Gertler et al: Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J. 2011. *Impact Evaluation in Practice*. World Bank.[3]
    - Glennerster et al: Glennerster, Rachel; Takavarasha, Kudzai. 2013. *Running Randomized Evaluations: A Practical Guide.* Princeton.[4]

Preparation before the workshop.
- Please prepare a brief (5 minutes) statement to introduce yourself (who you are, where you work, what are your expectations for the Learning Days) and to present your research question and general idea of your project that you will work on during the workshop. Every participant must have a research project to work on throughout the week. If you would like to discuss potential research project options with us in advance of the training, please send us an email. We are happy to discuss!

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[1] Download from http://www.rstudio.com/products/rstudio/download/ . If you already prefer using R with an editor other than RStudio, you do not need to install RStudio.
[2] We will distribute some pdfs of chapters from this book. The book itself is very much worth owning as a reference, as is Dunning's book.
[3] Download from https://openknowledge.worldbank.org/handle/10986/2550 License: CC BY 3.0 Unported.
[4] Open Access ancillary materials: http://runningres.com

- We ask that you download R and R Studio prior to the workshop. If you have difficulty downloading R, RStudio, or the packages, please email Natalia at nataliagarbirasdiaz@berkeley.edu for assistance.
- Please familiarize yourself with R, the statistical program we will be using. Have a look at a free introduction to R from the Code School, which runs entirely through your browser https://www.codeschool.com/courses/try-r. In addition, please complete the first lecture from the online R Programming course organized by Johns Hopkins University: (i) go to coursera.org, (ii) create an account (this is free!), (iii) sign up for R Programming at Johns Hopkins University (instructor: Roger Peng) under the "Courses" tab (iv) read the materials and watch the videos. The videos from the first week are about 2.5 hours long total.

Learning Days Agenda

Monday, 21 August 2017: Getting Started

Morning: **Introduction and causal inference**
9-10:30AM: Welcome (MJ, DN)
- Introduction of group
- Introduction of EGAP (what is + types of projects)
- Introduction of Mercy Corps and Convivimos
- Objectives of Learning Days
- Expectations for collaboration: Ask questions (when you ask questions you are helping everyone, including the professors)! It is ok to sit or stand during lectures and discussions (just not in front of other people).
- Logistics

10:30-11AM: BREAK

11–1PM: Lecture 1: Causal inference (DN)
- Research questions: what are *X* and *Y*? What might it mean to say *X caused Y*?
- The potential outcomes framework and the fundamental problem of causal inference
- What do experiments have to do with causality?

1PM–2PM: LUNCH

Afternoon: **Research Design and Design Clinic**

2:00–3:15PM: Design clinic: housekeeping (NG, all)
- Make sure you are set up with R
- Hands-on session on simple statistics in R

3:15–4PM: Introduction to projects, assignment of projects for the week (MJ, DN)

4-4:30PM: BREAK

4:30-5PM: Introduce Research Design Form (NG)

5–5:30PM: Design clinic
- Break into groups
- Small Group discussions on research ideas: What are causal drivers and what are outcomes? What do we mean by "intervention"/X-->Y? Provide examples of interventions and work through identifying X & Y. By what "theory of change" or "causal mechanism" should the drivers influence the outcomes?

5:30–6PM: Recap
- Quick go around: what did you find useful? What would you like to hear more about?
- For tomorrow: think through 4 Convivimos projects and own interventions, come tomorrow with 1 to work on for the rest of the workshop.

Resources
- [10 strategies for figuring out if X causes Y](#)

- [10 things you need to know about causal inference](#)
- R: http://www.r-project.org/
- Day 1. Key Tools for Experimental Research Design and Analysis in R

Tuesday, 22 August 2017: Identification and Randomization

Morning: Randomization strategies

9-10AM: Day 1 Recap
- Everyone announce which project they will work on for the rest of the week

10–11:30AM: Lecture 2: Randomization (NG)
- Mechanics of replicable randomization
- Strategies for randomization: simple, clustered, factorial, intertemporal, block randomized (the idea of the power of a statistical test)
- Design: Encouragement, placebo, others

11:30-11:45AM: BREAK

11:45AM–12:30PM: Research presentation
- Dan Nielson: Shell Games project

12:30–1:30PM LUNCH

Afternoon: Design Workshop

1:30-3:00PM: Experiment (NG)

3–4:15PM: Hands-on session on statistics and randomization in R (NG)

4:15-4:45PM: Design clinic: assignments and design form
- Work on research design form
- Focus on randomization strategies for each design

4:45–5PM: Recap
- Recap
- Quick go around: what did you find useful? What would you like to hear more about?

Resources
- [10 things you need to know about randomization](#)
- Day 2. Key Tools for Experimental Research Design and Analysis in R

Wednesday, 23 August 2017: Estimation of Causal Effects and Statistical Power

Morning: Hypothesis testing and Estimation and Testing of Causal Effects

9–9:30AM: Day 1 & 2 Recap
- Convivimos Research APS Discussion
- Checking in

9:30–11AM: What is a hypothesis test for a randomized experiment? (DN)
- Fisher's test of the sharp null hypothesis of no effects and relationship with large sample tests
- ATE: Variance, standard errors, p-values, confidence intervals, sampling distributions

11-11:15AM: BREAK

11:15AM-12:30PM: Group R session: hypothesis testing and estimation (NG)
- Focus on strategy for hypothesis testing and estimation in R

12:30-1PM: Work on research design form
- Meet one-on-one with Dan/Natalia
- Feedback and questions
- Work on research design

1–2PM LUNCH

Afternoon: Power Analysis and Design Workshop

2-3:35PM: Power (NG)
- What it is, relation to sample size, dispersion, standard methods, simulations
- Group R session: power

3:35-3:50PM: BREAK

3:50-4:30PM: Work on research design form
- Meet one-on-one with Dan/Natalia
- Feedback and questions
- Work on research design

4:30-4:45PM: Recap
- Recap
- Quick go around: what did you find useful? What would you like to hear more about?

4:45-5:?PM: Continue working on designs

Resources
- 10 things you should know about the local average treatment effect
- 10 things you need to know about spillovers
- https://egap.shinyapps.io/spillover-app/

- Day 3. Key Tools for Experimental Research Design and Analysis in R

Thursday, 24 August 2017: Threats to Causal Inference

Morning Threats to Inference

9:00–9:20AM: Reflections & Discussion of topics for Friday afternoon

9:20–10:20AM: Threats to inferences (What can go wrong?) (DN, NG)
- Partial compliance: LATE and ITT

10:20-10:35AM: BREAK

10:35AM–1PM: Design work
- Feedback and questions
- Work on research design

1PM–2PM LUNCH

Afternoon: Research presentation and Design Workshop

2-3PM: Threats to causal inference (NG)
- Spillovers & Attrition & Mediation

3-3:15PM: BREAK

3:15-5PM: Lessons from the field & other topics
- How to do good experiments with limited financial resources
- Ethics/IRB (working with minors, only treating a subset)
- Working with implementing partners
- Walking through the full study timeline
- Baseline/midline/endline
- Data collection: paper-based vs. PDAs/tablets
- Enumerators
- Transparency (pre-analysis plans)

5-7PM: Design clinic (optional)
- Feedback and questions
- Revise research designs
- Prepare Presentations

7:00PM: Celebratory dinner
- Radisson Hotel & Suites

Resources
- 10 things you need to know about statistical power
- 10 things you need to know about covariate adjustment
- 10 things you need to know about multiple comparisons
- https://egap.shinyapps.io/Power_Calculator/

Friday, 25 August 2017: Design presentations and Remaining Topics

Morning: Design Presentations

8:30-10AM: Individual run-through of presentations (optional)
- Sign up beforehand

10AM–12:30PM: Design presentations
- Each participant's does a 10-min presentation with 10-minutes discussion
- Addressing sampling, randomization approach, power, cluster randomized trials, potential threats

12:30–1PM: Wrap-up

1-2PM: Lunch